

ANU VENUGOPALAN

Professor, Physics

University School of Basic and Applied Sciences,
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EDUCATION

Ph.D - School of Physical Sciences, Jawaharlal Nehru University, New Delhi

M.Sc (Physics) - University of Roorkee [now IIT - Roorkee]

POSTDOCTORAL RESEARCH

Visiting Fellow – Tata Institute of Fundamental Research, Mumbai

Post Doctoral Fellow - Physical Research Laboratory, Ahmedabad, India

Areas of research work & interest

Foundations of quantum mechanics, the quantum-classical connection, emergence of classicality, environment induced decoherence, quantum information, confined quantum systems

WORK EXPERIENCE

Assistant Professor – University School of Basic & Applied Sciences, GGS IP University, New Delhi (1999-2006)

Reader [on deputation] - Centre for Philosophy and Foundations of Science, New Delhi (2006-2007)

Reader – University School of Basic & Applied Sciences, GGS IP University, Delhi (2007-2010)

Associate Professor – University School of Basic & Applied Sciences, GGS IP University, New Delhi (2010 – 2013)

Professor – University School of Basic & Applied Sciences, GGS IP University, New Delhi (2013-till date)

COURSES TAUGHT

Undergraduate - Physics I & II theory courses , undergraduate physics lab - **B.Tech** Programmes - GGSIP University

Post Graduate courses - quantum mechanics, quantum information, the physics of information technology, computational physics with matlab.-**M.Tech (Engineering Physics), M.Tech (Nanoscience & Technology) programmes** - GGS IP University

Ph.D course work - quantum mechanics, computational physics with matlab - GGS IP University

RESEARCH PUBLICATIONS

1. *Monitoring decoherence via measurement of quantum coherence*, **Anu Venugopalan**, Sandeep Mishra, Tabish Qureshi, **Physica A: Statistical Mechanics and its Applications**, **516 (2019) 308-316**
2. *Probing entanglement dynamics via quantum coherence for two strongly interacting particles in a double-well*, Sandeep Mishra, Anjana Bagga, **Anu Venugopalan**, **Journal Of Physics A: Mathematical and Theoretical**, **51(45), 455303 (2018)**
3. *An Integrated Hierarchical Dynamic Quantum Secret Sharing Protocol*, Sandeep Mishra, Chitra Shukla, Anirban Pathak, R. Srikanth, **Anu Venugopalan**, **International Journal of Theoretical Physics**, **1-12, Feb (2015)**
4. *Controlling wave function localization in a multiple quantum well structure* , Anjana Bagga and **Anu Venugopalan**, **Journal of Applied Physics** **113, 054310 (2013)**
5. *Preferred states of the apparatus* , **Anu Venugopalan**, **Pramana-Journal of Physics-Vol 78(2), pp 175-186 (Indian Academy of Sciences & Springer) (2012)**
6. *Measurement in Quantum Mechanics: Decoherence and the Pointer Basis*, **Anu Venugopalan**, in *Measurements in Quantum Mechanics*, ed. Mh. Reza Pahlavani, Publisher: InTech, (**February 2012,**) ISBN 978-953-51-0058-4
7. *Quantum interference of molecules-probing the wave nature of matter*, **Anu Venugopalan** , **Resonance: Journal of Science Education**, **Vol. 15, No. 1, pp. 16-31 (January 2010)**

8. *Decoherence and Matter wave interferometry* , T. Qureshi and **Anu Venugopalan**, **International Journal of Modern Physics B**, Vol. **22**, No. **8**, **981-990**, (2008)
9. *The Quantum Zeno Effect-Watched Pots in the Quantum World*, **Anu Venugopalan**, **Resonance: Journal of Science Education**, Vol **12** (4), p**52**, (April 2007)
10. *The Coming of a Classical World*, **Anu Venugopalan**, **Resonance: Journal of Science Education**, Vol **9**, **10**, (September 2004)
11. *Pointer States Via measurement in a Quantum measurement*, **Anu Venugopalan**, **Physical Review A** **61**, **012102** (2000)
12. *Superrevivals in the Quantum dynamics of a particle trapped in a finite square well potential*, **A. Venugopalan** and G. S. Agarwal, **Physical Review A** **59** (2), **1413** (1999)
13. *Exact Solutions of the Caldeira-Leggett Master Equation: A Factorization Theorem For Decoherence*, S. M. Roy & **Anu Venugopalan**, arXiv:quant-ph/991000 (1999)
14. *Energy Basis via decoherence*, **A. Venugopalan**, **Pramana-J. Phys.** **51**(5), **625** (1998) (Special issue on proceedings of the workshop on foundations of quantum theory)
15. *Decoherence and Schrödinger Cat states in a Quantum measurement*, **A Venugopalan**, **Physical Review A** **56** (5), **4307** (1997)
16. *The Quantum measurement process : Nature of the Apparatus*, **A. Venugopalan**, Deepak Kumar and R. Ghosh, **Current Science** **68** (1), **62** (1995)
17. *Decoherence and the Quantum Zeno effect*, **A. Venugopalan** and R. Ghosh, **Physics Letters A** **204**, **11** (1995)
18. *Analysis of the Stern Gerlach measurement*, **A. Venugopalan**, Deepak Kumar and R. Ghosh, **Physica A** **220**, **568** (1995)
19. *Effect of Decoherence on Bell's Inequality for an EPR pair*, **A. Venugopalan**, Deepak Kumar and R. Ghosh, **Physica A** **220**, **576** (1995)
20. *Preferred basis in a measurement process*, **A. Venugopalan**, **Physical Review A**, **2742** (1994)
21. *Wigner function description of nonlocal features of quantum fields generated in nonlinear optical processes*. **A. Venugopalan** and R. Ghosh, Recent developments in Quantum Optics, R. Inguva (Plenum Press, New York) (1993)
22. *Wigner function description of quantum mechanical nonlocality*, **A Venugopalan** and R. Ghosh, **Phys. Rev A** **44**, **6109** (1991)

PROJECTS

Department of Science and Technology (SERC Fast Track Scheme for Young Scientists - **2005**)

SELECTED LIST OF INVITED TALKS/WORKSHOPS/SYMPOSIA [LAST 7 YEARS]

Invited as a resource person to deliver two talks at the 1st Refresher Course in Physics at the UGC-HRDC, JNU (**September 2018**)

Invited speaker at **VIGYAN JYOTI** - a Basic Science and Engineering Camp for High School Girls, sponsored by Department of Science and Technology, Government of India, held in IIT Bombay. (**May 2018**)

Invited as a resource person to a talk at the 1st Interdisciplinary Course in Contemporary Studies at the UGC-HRDC, JNU (**February 2016**)

Invited as a resource person to deliver two talks at the 1st Refresher Course in Physics at the UGC-HRDC, JNU (**October 2015**)

Invited as a resource person to deliver two talks at the orientation programme for Assistant Professors at Centre for Professional Development in Higher Education (UGC-ASC) (**CPDHE**), University of Delhi (**December 2014**)

Invited speaker at a workshop on "Quantum mechanics and its Applications" held at IIIT, Noida, India, (**April 2013**)

Invited speaker the the 12th Refresher Course in Physical Sciences, held at the Academic Staff College, Jawaharlal Nehru University, (**September 2012**)

Invited speaker the the 11th Refresher Course in Physical Sciences, held at the Academic Staff College, Jawaharlal Nehru University, (**February 2012**)

Invited speaker at meeting organized in honour of Prof. E C G Sudarshan at the Institute of Mathematical Sciences, Chennai, (**September 2011**)

Invited speaker at the International Conference on Quantum Optics and Quantum Computing, (ICQOQC-11) at IIIT, Noida, India (**March 2011**)

Invited speaker at the International Programme on Quantum Information, Institute of Physics, Bhubaneswar, (**January 2010**)

Administrative Experience (selected)

Programme Coordinator, M.Tech(Engineering Physics), USBAS [2009-2012]
Admissions Committee USBAS [2009-2012]
Co-Convener, Srijan Science Club, GGS IP University [2012]
Coordination Committee, Centre for Ethics & Human Values, GGS IP University
[2013 - 2016]

Publications in other areas

Book

Identities in South Asia: Conflicts and Assertions

Eds. Vivek Sachdeva, Queeny Pradhan, **Anu Venugopalan**, 1st Edition, Routledge India
(2019 ,London,) DOI: <https://doi.org/10.4324/9780429031953>